REMARKS

[1-2] Claims 1-4, 6, 7, 9-13, and 15 were rejected under § 102 as being anticipated by Lin '852. This rejection is respectfully traversed.

[3] Claim 1 recites that the semiconductor chip region of the circuit board (the region of board 10 lying under the chip 12 in Fig. 1) does not overlap the reinforcement layer region (the region of board 10 lying under reinforcement layer 20 in Fig. 1). This feature is also illustrated in Fig. 2, showing reinforcement layer region 32 lying outside chip region 30.

The newly-claimed feature provides an advantage beyond the prior art, namely that the separate reinforcement region makes it possible to further thicken the reinforcement layer and thereby prevent warping during reflow (specification page 8, line 22 through page 9, line 1).

The Examiner applies region 306 in Fig. 3 of Lin to anticipate the claimed reinforcement layer. However, the region 306 lies directly under the chip 301, so that their regions overlap, contrary to the amended claims. The overlap is shown in Figs. 3-4 (where the dashed outline of the chip 301 transects the reinforcement regions 306) and also in Fig. 6, where the reinforcement 306 is seen to underlie the chip 301. No embodiment of Lin is seen that meets the new claim language.

[4-7] Claim 6 is amended to recite the same feature as claim 1, and the arguments above also apply to claim 6. The claims depending from claims 1 and 6 are allowable by their dependence.

[8] Claim 9 is amended to recite "reinforcement layers provided only in the third region," which excludes the reinforcement layers from the region which is covered by the chip. Also, claim 9 recites three regions that are "mutually separated" (second paragraph of claim 9), meaning that they do not overlap. Thus, the arguments above apply to claim 9 as well as to claims 1 and 6. (If the Examiner disagrees that "mutually separated" implies no overlap, then the Examiner is invited to telephone the undersigned attorney at the number below or at (717) 426-1664 to discuss possible further amendments.)

Furthermore, claim 9 recites that the third region "encloses" the regions of the wiring and chip, which is a feature that is not seen in the applied prior art.

[9-11] The claims depending from claim 9 are allowable by their dependence.

[12-14] Claims 5 and 8 were rejected under § 103 over Lin in view of Norville '615. This rejection is respectfully traversed on the grounds above and on the further grounds that the asserted motivation for combining the references (top of page 6 in the Office Action) is not supported by either reference nor by the general knowledge of the art. Lin shows a plane surface in Fig. 5F that is clearly suitable for mounting the chip 301 as shown in Fig. 6, as its surface irregularity is less than the thickness of the chip adhesive shown in Fig. 6. Lin mentions no need for any planarization nor suggests any such need.

[15-16] Claim 14 was rejected over Lin and Miyajima. This rejection is respectfully traversed.

Lin teaches (col. 3, lines 12-30) that the metallic reinforcement layer 306 should be near to the ball grid array for electrical shielding, and also teaches that the metallic reinforcement layer 308 can serve as a ground plane for the chip 301 (col. 5, lines 35). Further teaching in favor of metallic reinforcement is found at col. 7, lines 4-6 (better grounding), 9 (return current and impedance matching), 11 (reduced signal coupling), 14 (loading capacitance), and 15 (reduced noise and cross talk).

This teaching by Lin is not only contrary to the features of the independent claims as discussed above (since it teaches that the reinforcement should be near to the chip or the wiring), but also teaches against the asserted combination of Lin and Miyajima. Substituting the insulating material of Miyajima for Lin's metallic layer would destroy the shielding function of the metallic layer. The person of ordinary skill would have realized this, and not have made the asserted combination.

Withdrawal of the rejections is requested.

Respectfully submitted,

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Date

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